**Designing Effective Science Instruction Understanding Chapter (**pages 77-126)

**1) Set goals:**

* PLC members set individual goals for developing student conceptual understanding by changing their instructional practice.
* PLC members consider what they’ve learned about effective science instruction and how their PLC can support them as they make instructional changes.

**2) Select a strategy** for initial focus**:**

Strategy 1: Engaging Students in Science Inquiry (Pages 77-88)

Using an inquiry approach engages students with the content in meaningful ways. Students learn now scientists develop explanations using evidence, teachers uncover students’ existing science conceptions, and students recognize what they understand and what they don’t understand.

Strategy 2: Implementing Formative Assessments (Pages 88-100)

Formative assessment of student learning can be incorporated into any lesson but should be included after teaching a concept. The information generated can be used to inform teaching and learning. Formative assessments can be used before instruction, during instruction, and/ or after instruction.

Strategy 3: Addressing Preconceptions and Prior Knowledge (Pages 100-106)

Student misconceptions (their existing incorrect ideas about science) that are revealed during instruction must be confronted. If the scientific explanation does not offer a more plausible explanation, students will hold on to their prior ideas, even when faced with observations and evidence to the contrary.

Strategy 4: Providing Wrap-Up and Sense-Making Opportunities (Pages 107-112)

To aid student learning, teachers need to include both sense-making activities for each new concept and wrap-up activities at the end of each lesson.

Strategy 5: Planning for Collaborative Science Discourse (Pages 112-120)

According to brain research and research into how people learn, learning is a social activity and is more effective when we are able to discuss our ideas and thinking with others. The research shows that student learning improves when cooperative learning methods are used and discussion is a key feature.

Strategy 6: Providing Opportunities for Practice, Review, and Revision (Pages 120-126)

To improve understanding of the content that is being learned, teachers must focus on the most important learning goals and choose effective strategies and contexts for student learning and sense-making. But all of that is for naught if students are only exposed to the content once or twice.

**3) Study the strategy**

Read the section in Designing Effective Science Instruction about the strategy. Choose a reading strategy that seems appropriate for the length of the section. If possible, have PLC members read the entire section. An easy strategy to use might be 3-2-1. Three things you found out, two interesting things you learned related to using the strategy, one question you still have. If the section is long and you prefer to jigsaw the reading, divide the section up in a way that makes sense for your PLC.

**4) Discuss the strategy and the implications for classroom practice.**

PLC discusses the reading and thinks about what implications this might have for classroom practice.

**5) Each PLC member plans how to implement this strategy within their own classroom.**

After the group discussion, the PLC members make concrete plans to implement this strategy within their own classroom before the next PLC meeting. Planning for implementation can occur within the PLC meeting OR could occur during meetings with grade level partners.

**6) Identify evidence of student thinking that will be collected as part of the implementation plan.**

Teachers will implement the strategy before the next PLC meeting and should plan to bring the collected evidence back to the group. Research shows teachers are more likely to change their instructional practice if they commit to an instructional plan with their colleagues and are held accountable for making those changes.

**7) Next PLC meeting**

Each teacher shares how they implemented the strategy in their classrooms as well as the evidence of student understanding that they collected. If the strategy is one that teachers want to continue to work on as a PLC, teachers can consider other ways to incorporate the strategy into their instruction, or the group can choose another strategy.

**8) Reflect**

Each teacher reflects on how this process has impacted their instruction:

* What have they learned about this strategy?
* How did being responsible to others impact their desire to implement the strategy?
* Have they been able to generalize the strategy to other facets of their instruction?